

## Isolating individual polarization effects from the Mueller matrix: comparison of two non-decomposition techniques: supplement

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# Isolating individual polarization effects from the Mueller matrix; comparison of two non-decomposition techniques

## Supplementary Figures

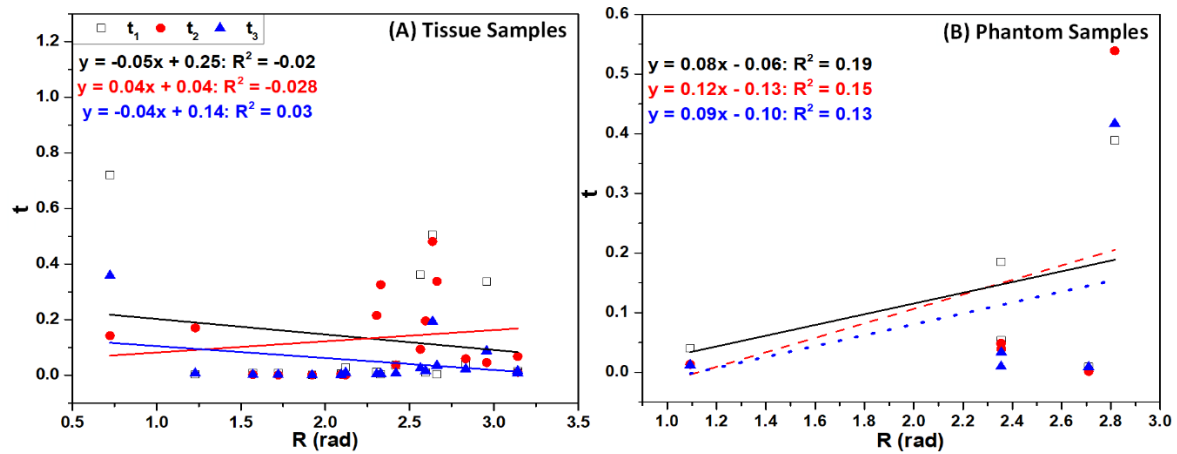


Figure S1: Comparison of the retardance variables for the two non-decomposition (MMT and DIMM) methods; Scatter plots integrated with the linear fitting of the retardance variables as computed by equation 2-4 (MMT method) and equation 8 (DIMM method) for (A) tissue, and (B) phantom samples.

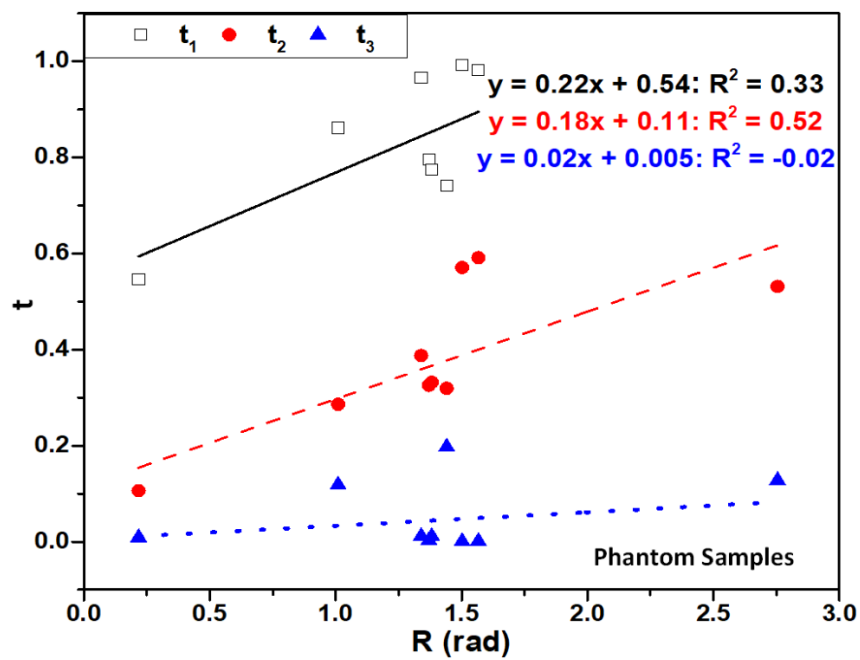


Figure S2: Comparison of the retardance variables for the two non-decomposition (MMT and DIMM) methods; Scatter plots integrated with the linear fitting of the retardance variables as computed by equation 2-4 (MMT method) and equation 10 (DIMM method) for (A) tissue, and (B) phantom samples.

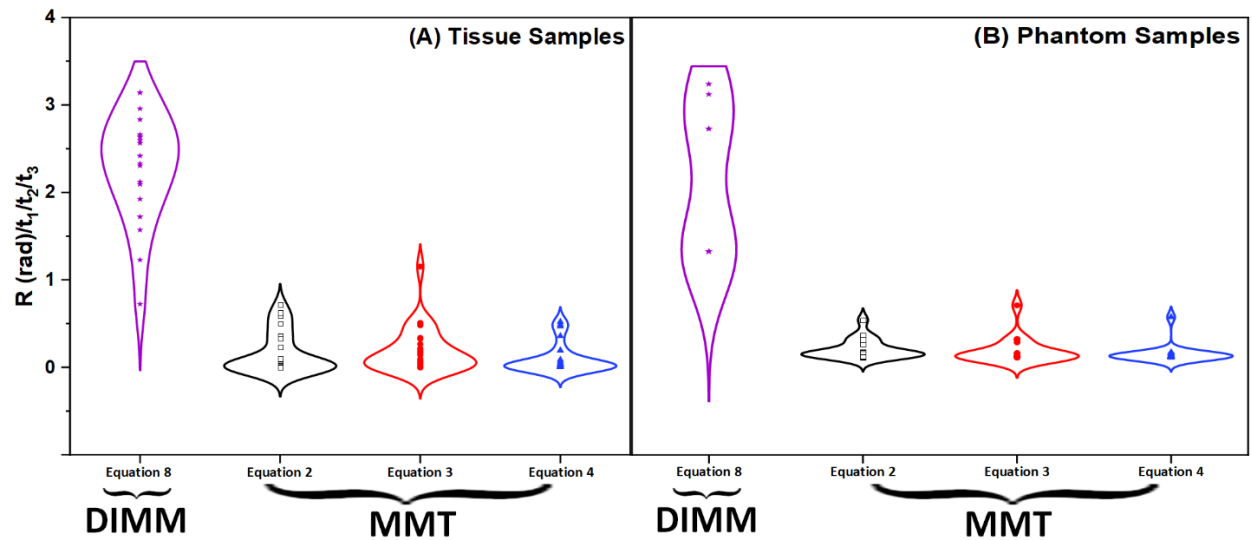


Figure S3: Retardance variable based violin plots for (A) tissue, and (B) phantom samples. The presented data of retardance variables were computed from equation 2-4 (MMT method) and equation 8 (DIMM method), as mentioned on the x-axis.

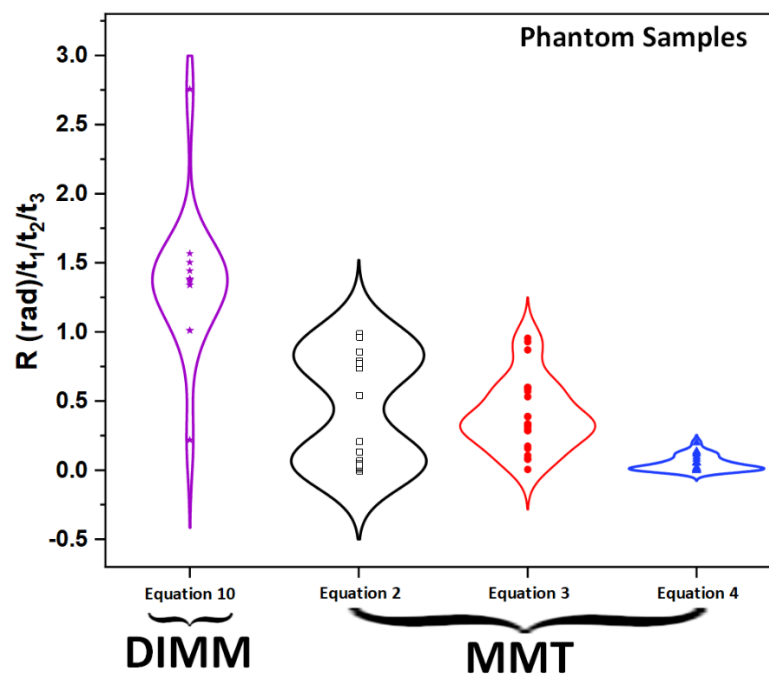


Figure S4: Retardance variable based violin plots for (A) tissue, and (B) phantom samples. The presented data of retardance variables were computed from equation 2-4 (MMT method) and equation 10 (DIMM method), as mentioned on the x-axis.

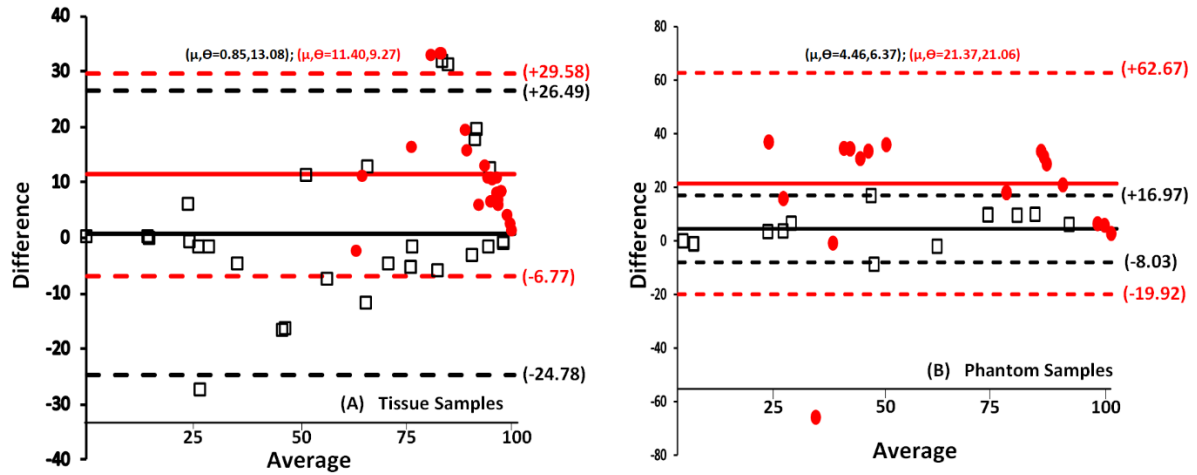


Figure S5: Bland and Altman plots showing the paired differences for the paired depolarization variables as computed with the two non-decomposition techniques for (A) tissue, and (B) phantom samples, as computed from equation 1 (MMT method) and equation 7 (DIMM method).

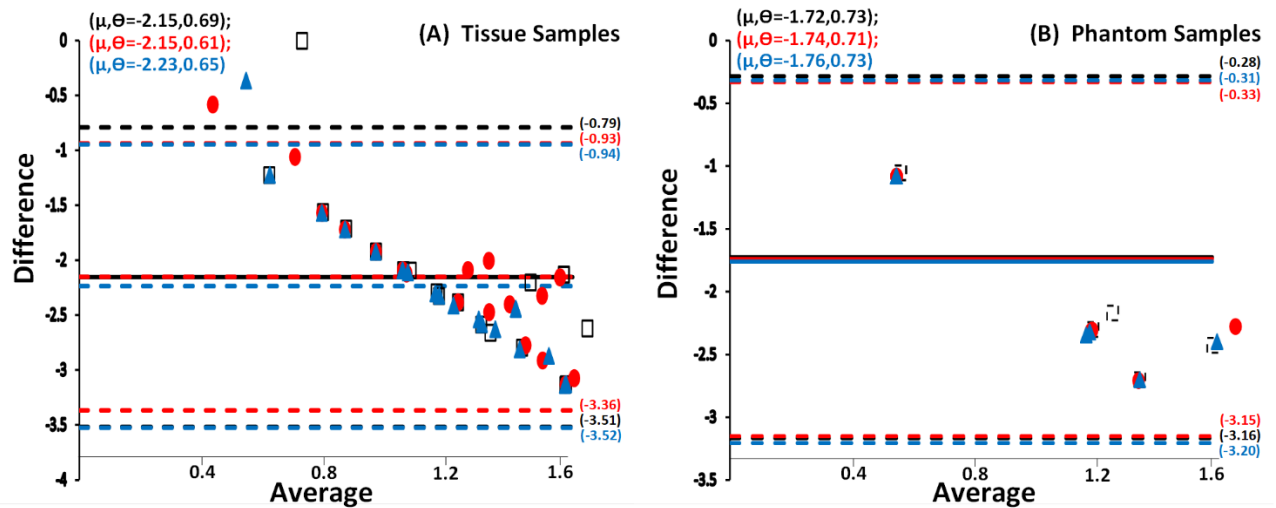


Figure S6: The Bland and Altman plots showing the paired differences for the retardance variables as computed from equations 2-4 (MMT method) and equation 8 (DIMM method) for (A) tissue and (B) phantom samples.

### **Violin plots and its interpretation**

The violin plot is a graphical illustration for the distributions of numeric data. In particular, the violin plot is a powerful visual tool that presents valuable information for multiple parameters of the numeric data, concurrently. Moreover, the violin plots are especially useful when comparing the distributions of data among multiple groups, as is the case for the present study. Specifically, the peaks, valleys, and tails of data distribution in each group are compared to assess the similarities or differences.

In general, the violin plot integrates a kernel density function to confer the data dispersion and shape of the distribution. As such, the width of the violin plot at a given section corresponds with the frequency of the data points in that section. Consequently, the wider (i.e., peak)/ skinnier (i.e., valley) regions of the violin plot demonstrate a higher/ lower probability that the data points will take on the given value.

The violin plots are often complemented / overlaid by other chart types, to provide additional information which can be beneficial for comparing the data groups. That said, one particular case of interest is complementing the violin plot with a rug/ strip plot where every data point is added to the central line of violin plot as a dot, analogous to a 1D scatter plot. We have utilized this option (in Figure 3 and 4) to present and compare the data for the two groups (MMT and DIMM methods). Showing the individual data points inside the violin plot not only clarify the density distribution but also illustrate critical information about size of the group, which is not evident in the violin plot. Other distribution plots which can be accompanied by the violin plot include box plot, swarm plot, etc. It is noteworthy that these complementary charts are best utilized when there are a low to medium number of data points in each group, as is the case for the present study.